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Attentional capture by reward-distractors under perceptual load

[1] MATIAS J., [2] QUINTON J.-C., [3] COLOMB M., [1] IZAUTE M., [1] SILVERT L.

jeremy.matias@uca.fr

[1] Université Clermont Auvergne, CNRS, LAPSCO, F-63000, Clermont-Ferrand, France
[2] Université Grenoble Alpes, CNRS, LJK, F-38000, Grenoble, France
[3] CEREMA, Département Laboratoire de Clermont-Ferrand F-63017, Clermont-Ferrand, France

INTRODUCTION

Value-Driven Attentional Capture (Anderson, 2013)

- Recent research revealed that visual distractors associated with or signaling **reward** outcomes **capture attention** in spite of being **neither salient nor relevant** for the ongoing task.

Automatic attentional capture ?

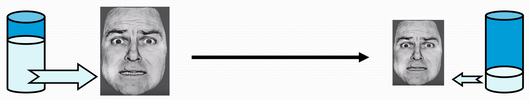
Perceptual Load Theory (Lavie, 2010)

- In situation of ***low perceptual load*** spare capacities from relevant processing "spills over" to the irrelevant items, resulting in distractor interference.

- Attentional capture by irrelevant distractors can be prevented in situations of ***high perceptual load*** that exhaust all available capacities in the perception of relevant stimuli.

Perceptual Load and Emotion (e.g., Silvert et al., 2007)

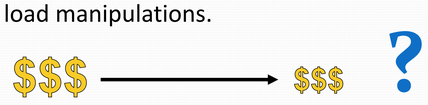
- Distraction by irrelevant **fearful faces** is reduced under high load.



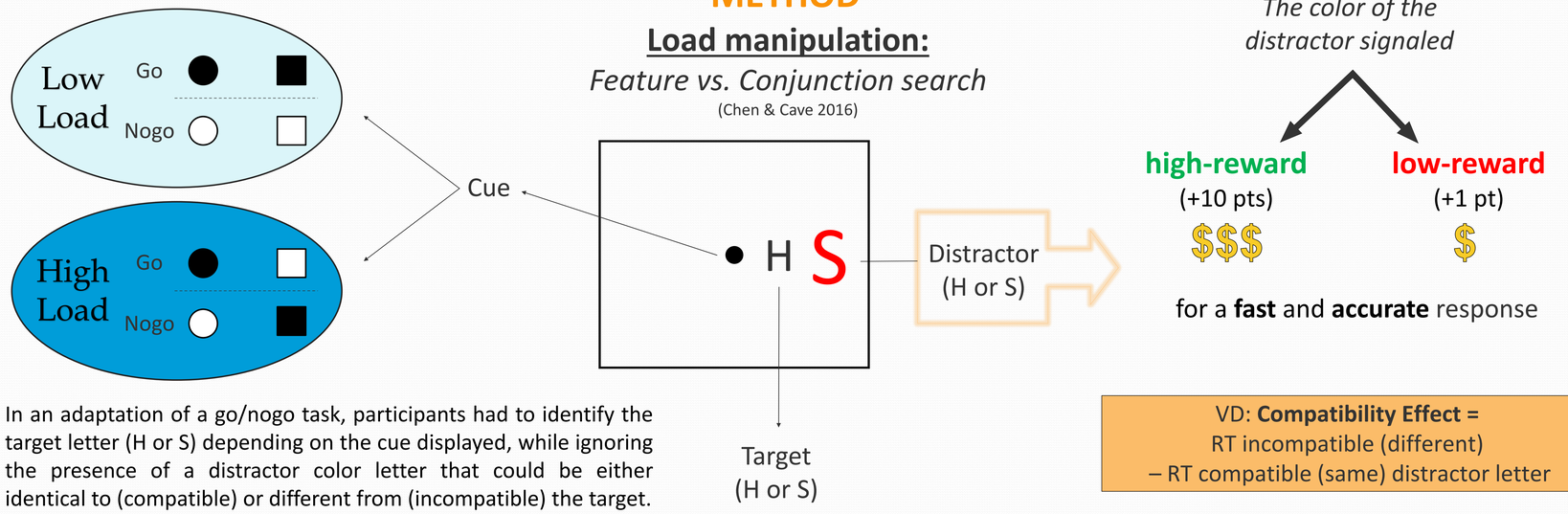
- Processing of irrelevant **negative** emotional stimuli depends on available attentional resources.

Perceptual Load and Reward ?

- If attentional capture by reward distractors is automatic, therefore, interference by reward distractors should be immune to perceptual load manipulations.



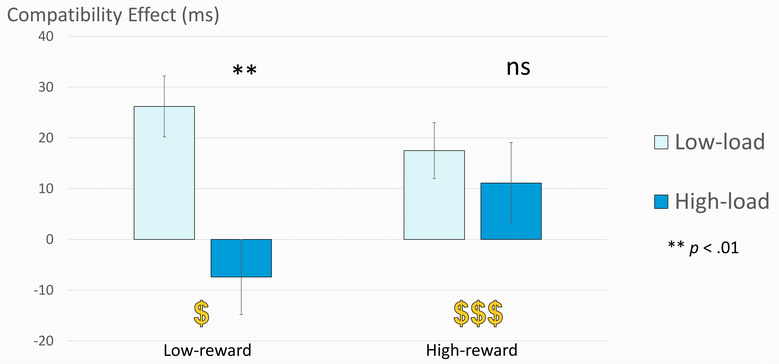
METHOD



In an adaptation of a go/nogo task, participants had to identify the target letter (H or S) depending on the cue displayed, while ignoring the presence of a distractor color letter that could be either identical to (compatible) or different from (incompatible) the target.

VD: **Compatibility Effect =**
RT incompatible (different)
– RT compatible (same) distractor letter

RESULTS



Compatibility Effect: *Reward* (Low; High) x *Load* (Low-load; High-load)

- Reward: $F(1, 29) = 1.23$, p = .28
- Load: $F(1, 29) = 5.09$, p < .05

➢ **Reward x Load: $F(1, 29) = 4.37$, p < .05**

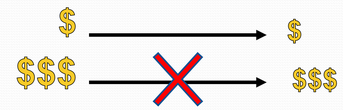
High perceptual load only eliminated low-reward distractor interference whereas high-reward distractor interference seems « immune » to load manipulation.

Errors: *Reward (2) x Load (2)*

- Reward p < .01
- **Load p < .001** → confirming load manipulation
  - ➢ Reward x Load p < .05

DISCUSSION

- High perceptual load reduces low but not high-reward peripheral distractor interference.



- High-reward distractor interference was observed despite low level of free residual attentional resources (i.e., high perceptual load)

→ **Automatic** attentional capture

- At odds with what is observed for fearful faces distractors.
- ***Valence effect*** (with reward as positive events and fearful faces as negative events) might explain those discrepant results.
  - Interference by centrally presented distractor of *negative* but not *positive* valence is reduced under high perceptual load (Gupta et al., 2016).
  - Growing body of studies demonstrating an advantage for positive over negative emotional information in attracting and capturing attention (e.g., Srivastava & Srinivasan, 2010).
- However, the persistence of the interference effect for high reward distractors may be due to the ability of those stimuli to *capture* attention, but also to *hold* attention once it has been captured, or both.

EEG study in progress…

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